

# Dishwasher Service Manual

Type:

DW5A/DW5B/DW5E/DW5F/DW5H/DW5AL/DW5HL

## Commonly Used Tools

For the sake of safe and efficient manipulation, you should prepare and learn to use the following tools prior to servicing the dishwasher:

Cross screwdriver,  
Common screwdriver,  
Torque spanner,  
OTK caliper and universal meter.

**Attention:** never measure the resistance of live cord. Otherwise, you measuring device may be damaged.

## The trouble shooting

| Problems | Reasons                        | Directions                        |
|----------|--------------------------------|-----------------------------------|
| E1       | The water supply is turned off | Turn the water supply on          |
|          | Inlet hose is bended           | Put the hose in the right way     |
|          | The water pressure is too low  | Minimum water pressure of 0.03Mpa |

|                                                        |                                                              |                                               |
|--------------------------------------------------------|--------------------------------------------------------------|-----------------------------------------------|
|                                                        | Water valve is damaged                                       | Replace the water valve                       |
|                                                        | Water valve or hose is blocked                               | Disassemble and clean the water valve or hose |
| E2                                                     | Damaged or defective drain pump                              | Replace the drain pump                        |
|                                                        | Drain hose is obstructed or bended                           | Put the hose in the right way                 |
|                                                        | Working switch wiring is wrong connected                     | Repair the wiring                             |
|                                                        | The floater base is too dirty and cause floater is stickled  | Replace or clear the floater base or floater  |
|                                                        | Defective the electric control                               | Replace the electric control                  |
| E3                                                     | The voltage too low                                          | Minimum voltage of 198V                       |
|                                                        | Damaged the thermostat 2 or the fuse for the heating element | Replace the thermostat 2 or the fuse          |
|                                                        | The wiring is wrong connected                                | Repair the wiring                             |
|                                                        | Thermostat 1 is Damaged                                      | Replace the thermostat 1                      |
|                                                        | Damaged the heating element                                  | Replace the heating element                   |
|                                                        | Defective the electric controller                            | Replace the electric controller               |
| E4                                                     | Water valve is damaged                                       | Replace the water valve                       |
|                                                        | The protection switch wiring is wrong connected              | Repair the wiring                             |
|                                                        | Working switch wiring is wrong connected                     | Repair the wiring                             |
|                                                        | Defective the electric control                               | Replace the electric control                  |
| `Salt leakage (for equipped with softener)             | The cover of the softener is loosed                          | Tighten the cover                             |
|                                                        | The o-ring of the cover is inversed                          | Replace the o-ring                            |
| Not operate after push start key                       | Door switch is damaged                                       | Replace door switch                           |
|                                                        | Door lock is damaged                                         | Replace door lock                             |
|                                                        | The wiring is wrong connected                                | Repair the wiring                             |
|                                                        | Defective electric control                                   | Replace electric control                      |
| Fill water not stop                                    | Water valve is damaged                                       | Replace the water valve                       |
|                                                        | Defective electric control                                   | Replace electric control                      |
| Too less fill water                                    | Dishwasher not level                                         | Level the dishwasher                          |
| Dishwasher runs with door open                         | Door switch wiring is wrong connected                        | Repair the wiring                             |
|                                                        | Defective electric control                                   | Replace electric control                      |
| Motor hums but not start or run.                       | Defective motor bearings                                     | Replace motor.                                |
|                                                        | Defective motor capacitor.                                   | Replace motor capacitor.                      |
|                                                        | Damaged or defective wiring                                  | Repair wiring                                 |
|                                                        | Improper motor voltage.                                      | Replace motor.                                |
| Motor trips out on internal thermal overload protector | Improper motor voltage.                                      | Replace motor.                                |
|                                                        | Motor shaft binding.                                         | Replace motor.                                |
|                                                        | Defective motor capacitor.                                   | Replace motor capacitor.                      |
|                                                        | Motor windings shorted.                                      | Replace motor.                                |
| The fuse for the heating                               | Defective or too dirty the inner of the bobber base          | Replace or clear the bobber base              |

|                     |                                                            |                                                                                   |
|---------------------|------------------------------------------------------------|-----------------------------------------------------------------------------------|
| element break       | Defective electric control                                 | Replace electric control                                                          |
| Water siphons out   | Drain hose loop is too low.                                | Move drain hose to proper height.                                                 |
|                     | Drain hose connected to a floor drain not properly vented. | Install a vent air gap at counter top.                                            |
| Noisy pump assembly | Debris in bottom of tub sump area                          | Clean out the sump area                                                           |
|                     | Pump parts are not properly installed                      | Inspect the pump and correct and installation errors                              |
| Poor clearing       | The sump or the filter is obstructed                       | Clear the sump and filter                                                         |
|                     | The filter is not in position                              | Put filter and micro filter in position                                           |
|                     | The filter is distorted                                    | Repair or replace filter                                                          |
|                     | Dishes or knife/fork or something else stifled spray arm   | Rotating the spray arm before start                                               |
|                     | Improper loading of dishes, pots etc.                      | Instruct the customer on proper loading of the dishes, refer to the owners manual |
|                     | Too less of the detergent                                  |                                                                                   |
|                     | The wrong wash program be chosen                           |                                                                                   |
|                     | Defective detergent/rinse module                           | Replace the detergent/rinse                                                       |
|                     | Spray arm is blocked                                       | Clear or replace the spray arm                                                    |
|                     | Too few of the inlet water                                 | Check as the ERROR 2                                                              |
|                     | Defective pump                                             | Replace the pump                                                                  |
|                     | No salt in the softener                                    | Add salt to the softener                                                          |
| Poor drying         | Improper loading of dishes, pots etc.                      | Instruct the customer on proper loading of the dishes, refer to the owners manual |
|                     | The wrong wash program be chosen                           |                                                                                   |
|                     | Defective detergent/rinse module                           | Replace the detergent/rinse                                                       |

Note: in the narration of this manual, the number in brackets behind the part stands for the serial number of the part in the explosion diagram. The actual configuration may be different.

### III. Check of Performance: Loading of Dishes

Many of the performance failures of the dishwasher are not the result of mechanical troubles. And the unsatisfactory washing result can usually be corrected without any service. This manual deals first with the problems in performance. To have satisfactory washing result, you have to use the machine correctly. First thing first, the dishes shall be placed in a correct manner. If the machine works well and the washing result is unsatisfactory, you should check the layout of the dishes as follows:

- 1 Load the dishes as instructed in the user's manual.
- 2 Preparation of the dishes such as dumping the remaining food, and removing from the dishes food lumps, starches in particular, shall be done prior to loading.

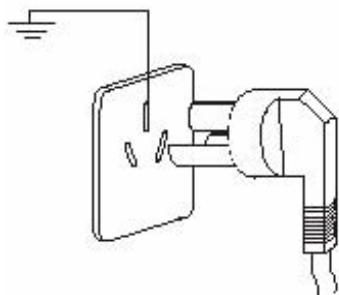
- 3 The dishes shall face the water flow from the spray arm for free washing. Do not place the dishes in an overlapped way.
- 4 Load heavy pans and large soup bowls downwards. If the upper racks are barred from water flows, do not place articles on them any more.
- 5 Leave some space in the front of the wire basket so that the water flow may wash out the dishwasher detergent from the detergent trough in the inner door.
- 6 On the fork/knife rack, the tableware shall be placed with handle down evenly. Do not load there the articles that may fall out from the bottom.

#### IV. Check of Performance: Detergent and Brightness Liquid

The water (pressure, hardness and temperature) and the detergent are the major elements that affect the washing effect of the machine. Choose the right detergent and dosage according to the local water condition, you will have satisfactory washing result.

- 1 Use only the fresh and dry detergent of the designated brand. Outdated detergent will reduce the washing effect.
- 2 Contact the local water supply company for the water condition, if applicable. The higher the water hardness is, the more detergent shall be used.
- 3 Check the brightness liquid in the dispenser and add without delay if it is insufficient. The brightness liquid helps the water to drip, making the dishes easy to dry and curbing the formation of water specks on the surface of the dishes.

#### V. Power cord



The power cord of the dishwasher usually has a three-pin plug. Connect the power supply as instructed in the user's manual. If the dishwasher does not work, the power cord might be in the fault. Most of the power cord troubles arise from damaged cord or loose connection, and are visible.

##### Attention:

To avoid electric shock, the power socket and power cord shall be well grounded. Never use two-hole conversion connector that has no ground terminals.

##### Removal and replacement:

- 1 Disconnect the power prior to check.
- 2 Check the power plug. Improper connection may lead to bad contact.
- 3 Pull out the power plug in one stroke. Never pull at the power cord or use a knife or other sharp tools that may cut the cord.
- 4 Check the power plug for overheat caused damage, corrosion or looseness. In case of troubles, remove the outer casing first, then the rear panel and replace the power cord (see Process 6).
- 5 Open the power cord clamp, remove the old power cord and replace a new one with terminals. Secure the power terminals to the connection terminals, and replace the power cord clamp.
- 6 Replace the rear panel and the outer casing.

#### VI. Removal of Outer Casing, Control Panel, Rear

This dishwasher is completely sealed. In order to repair internal parts, you have to remove the outer casing before you can check and repair the parts. An ohmmeter and the ability to read circuit diagrams are needed in this step.

Removal and replacement:

- 1 Turn all the switches OFF and pull out the power cord plug.
- 2 Remove the three screws on the sides of the outer casing.
- 3 Open the door, and remove the six screws in the front of the inner container (see fig. 1 below). Note: do not mix these stainless steel screws with the other ordinary ones.
- 4 Remove the seven screws in the back of the outer casing (see fig. 2 below).
- 5 Remove the screws in position D in fig. 2 below and take away the rear panel.
- 6 Lift up and away the outer casing from the dishwasher, check and repair the internal parts.
- 7 Remove the six screws from the control panel holder (60) (see fig. 3 below) and the two stainless steel screws in the inner container (see fig. 1 below), and pull out the control panel.
- 8 Turn the dishwasher upside down, remove all the screws in the bottom pan, open the cord clamp and remove the bottom pan.

## VII. Check Internal Connecting Wire

The internal connecting wire connects the I/O PCB the power switch, the inlet valve, the heating elements and other electric elements together. The wires shall be kept intact. Any damage to the wire may cause overheat and result in broken wire. Common troubles to the internal connecting wire are broken wire, bad connection terminal contact, and connection terminal insulation layer damages. To repair the dishwasher, the ground shall be connected. When an electric component is replaced, check whether the ground is connected again. This is a crucial step to avoid electric shock and short circuit.

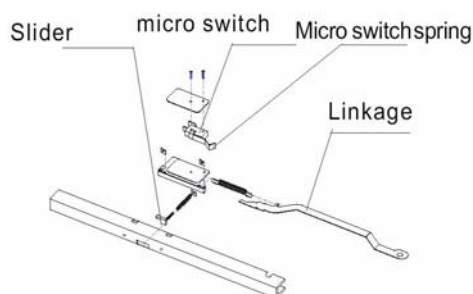
Attention:

To replace electric cord, use the cord of the same temperature resistance and specifications. The specifications and temperature rise are marked on the cord.

Removal and replacement:

- 1 Disconnect the power prior to check.
- 2 Open the outer casing, and, if necessary, remove the bottom panel.
- 3 Check the wires and connectors and replace the damaged ones.

## VIII. Door Lock Assembly



The working mechanism of the door lock is that the linkage bolts up the door hook, which, in its turn, presses the micro switch spring in the lock assembly to form a closed circuit. The lock mechanism consists of the door lock holder, the slider and the micro switch. When the door is opened, the door hook is withdrawn to release the micro switch, cutting the power supply for open door protection.

In case of worn out slider, micro switch failure or deformed micro switch spring, troubles may occur and the dishwasher will stop to work as usual.

Removal and replacement:

- 1 Pull out the power cord plug prior to servicing the door lock mechanism.
- 2 Remove the outer casing.
- 3 If micro switch failure, disconnect the micro switch, remove the two screws and replace a new micro switch.
- 4 If deformed micro switch spring, adjust the spring with a nipper pliers so that the micro switch returns to its original position when the slider is released, and the micro switch closes when the slider is pressed tight, or replace the micro-switch.

## **IX. Electrical controller**

The electrical controller of the dishwasher consists of a control PCB and I/O PCB, it controls the various operations of the dishwasher automatically. The output cords of the electrical controller are in different colors. With the circuit diagram in hand, you can track the circuit from the electrical controller to any element. The electrical controller is a very reliable unit. In case of dishwasher troubles, check other causes first before focusing on and replacing the electrical

The power switchcontroller. Such as the power Removal and replacement:switch, it is a push-button switch.

- 1 Pull out the power cord plug.
- 2 Remove the outer casing.
- 3 Press the power switch and check with an ohmmeter whether the normally open terminal is closed. If it is not closed, replace the switch.
- 4 Remove the control panel, unscrew the screws to remove the defect switch, and replace with a new one.
- 5 Connect the wires behind the switch and check if they are connected fast.

## **X. Protection Switch and Working Switch**

Removal and replacement: The inlet water flux of the dishwasher is implemented by a float switch which composed of two micro switches. The up switch is the working level. The other controls the protection level . The working level is set at 88-92mm above the sump bottom, and the protection level is 5mm or more below the brink of the inner container. The check and adjustment of the switch:

If switch trouble is suspected, check whether the dishwasher is level. If it is in level position, remove the outer casing. Add water to the inner container, and check whether the float and lever is choked. In case of choking, correct it. If the dishwasher does not work when the water level is over 92mm, the switch might be obstructed or the motor wiring is wrong connected. Please replace it or Repair the motor wiring. If the protection switch remain placid when the water level is over 5mm below the brink of the inner container, the floater base and the filter might be blocked or the floater base is too dirty cause the floater is stuck. Please clean the filter, floater and floater base.

## **XI. Inlet Valve**

The inlet valve controls the water volume into the dishwasher. The electromagnetic valve is fixed on the valve base. When it is powered, a magnetic field will come and pull the valve core to let in the water. The feeding of the water depends on the electrical controller, which controls the opening of the electromagnetic valve. In normal circumstance, the water level in the inner container of the dishwasher shall be 88-92mm above the sump bottom. Open the door to check the water level when water is filled. During the washing operation, the inlet valve may open to add some water.

Removal and replacement:

Check and replace the inlet valve.

- a. Turn the power of the dishwasher to OFF, and pull out the power cord plug (guard against sharp edge from hurting the power cord).
- b. Check with an ohmmeter as instructed.
- c. Remove the outer casing and the rear panel.
- d. Check the connecting wire of the inlet valve for looseness and the valve for crevice.
- e. Check the connection of the inlet hose.
- f. If the incoming pressure in the water tank is lower than the normal level, remove the inlet hose, clean, or, if necessary, replace the filter screen, and reconnect the

### **inlet hose.**

- g. Check the inlet valve terminals with an ohmmeter. The probes should touch the terminals of the inlet valve. If the pointer does not move, replace the inlet valve with a new one.
- h. When replacing the inlet valve, turn down the water tap and remove the clamp and the connecting tube.
- j. Unscrew the screws in the inlet valve support. Replace the inlet valve with a new one, and reconnect the tube and wire. Connect the inlet hose when the dishwasher is ready.

## **XII. Washing Pump Motor Assembly**

**Water Pump Motor Assembly** The dish washing is a joint accomplishment of the washing pump assembly and the drain pump. The possible troubles of the washing pump assembly include motor damaged, motor capacitor damaged, damaged pump sealing spring, broken sealing, broken connecting tube, etc.

Steps for the check:

- a. Turn the power of the dishwasher to OFF, and pull out the power cord plug.
- b. Remove the outer casing, and turn the dishwasher upside down.
- c. Remove the connecting screws around the bottom panel and the screws to the motor support, the drain motor and the pressure switch bracing bar.

- d. Check the capacitor, if necessary, replace a new one.
- e. Check the circulation pump for defects. In case of defective pump, replace it in the following manner:
  - (1) Remove the inlet hose clamp and the circulation pump;
  - (2) Replace a new circulation pump;
  - (3) Put on a new inlet hose clamp and connect the tubes and wires;
  - (4) Tighten the clamp.
- f. Check the drain pump. In case of defective pump, replace it in the following manner:
  - (1) Remove the inlet hose clamp and the drain pump;
  - (2) Replace a new drain pump;
  - (3) Put on a new inlet hose clamp and connect the tubes and wires;
  - (4) Tighten the clamp.
- f. Check the connecting tubes and replaced the damaged ones.

#### Removal of Drainage Troubles

- a. Check the drain hose, air bubble or blockage and make necessary correction.
- b. Check the drain pump. If damaged, replace the drain pump as specified above.

### **XIII. Heating Element and Protective Thermostat**

The heating element is located in the sump. When it is powered in the heated washing cycle, it warms up the water, which will clean the dishes more effectively, and generates heat after washing to dry the dishes. The heating element has a nichrome filament inside. You can measure the resistance with a universal meter to check its condition. The protective thermostat is a temperature limitation switch and a safety device. In case the dishwasher fails and the temperature inside the inner container rises above a specific limitation, the thermostat will cut the heating element circuit to avoid any damage to the machine.

#### Removal and replacement:

Remove the outer casing. From the left side, you can see the heating element assembly installed to the end of the sump. Pull out the connecting terminal of the heating element. Check the heating element with an ohmmeter for damage and replace the damaged one. Remove the connecting nut and the thermostat. Remove the end cap of the heating element and take the heating element out of the sump. Replace a new heating element and install the assembly as usual. Note: install the thermostat end with heat conducting silicone grease, tighten the heating element nut, and secure the gasket and end cap. The screws shall be wrenched tight. No leakage is allowed. The connecting terminal shall be upright, and the heating element terminal shall be securely connected. Connect the power cord and reinstall the machine. adjusting screw common

### **Water Pump Motor Assembly**

The dishwashing is a joint accomplishment of the circulation pump and the drain pump. The possible troubles of the water pump motor assembly include burnt motor coils, starting capacitor (78) damage, damaged pump sealing spring, broken sealing, broken connecting tube, etc. Removal and replacement:

- a. Remove the outer casing, and turn the dishwasher upside down.

b. Remove the connecting screws around the bottom pan and the screws to the circulation motor support, the drain motor and the pressure switch bracing bar.

c. Check the capacitor and, if necessary, replace a new one.

d. Check the circulation pump for defects. In case of defective pump, replace it in the following manner:

(1) Remove the inlet hose clamp and the circulation pump;

(2) Replace a new circulation pump;

(3) Put on a new inlet hose clamp and connect the tubes and wires;

(4) Tighten the clamp.

e. Check the drain pump for defects. In case of defective pump, replace it in the

following manner: (1) Remove the inlet hose clamp and the drain pump;

(2) Replace a new drain pump;

(3) Put on a new inlet hose clamp and connect the tubes and wires;

(4) Tighten the clamp.

f. Check the connecting tubes and replaced the damaged ones.

#### Removal of Drainage Troubles

a. Check the drain hose for twist, air bubble or blockage and make necessary correction.

b. Check whether the motor is burnt. If so, replace the drain pump as specified above.

#### **XIV. Overheat Thermostat**

This thermostat is designed to prevent overheating of the heating element.

The temperature limitation is set at 90 . Below this limitation, the circuit is closed.

Once the temperature rises above this limitation, the circuit is cut, protecting the heating element from being burnt. Removal and replacement: Remove the outer casing. Remove the thermostat connecting wire and check with an ohmmeter whether the thermostat circuit is closed in normal temperature and opened when temperature rises above 90 . If the result is positive, the thermostat is normal. Otherwise, it fails and shall be replaced. From the lower left side, you can see the thermostat at the end of the sump. Remove the nuts on the thermostat mounting plate. Remove the mounting plate and the thermostat. Replace a new thermostat and add some heat conducting silicone grease to its end. Wrench tight the nuts on the thermostat mounting plate and connect the thermostat connecting wires. Replace the outer casing.

#### **XV. Water Temperature Thermostat**

This thermostat is designed to inspect the water temperature and control the heating element. The temperature control point is set at 45 (different temperatures are available and can be observed from the thermostat). The circuit is opened below this temperature and closed above it.

Removal and replacement: Remove the outer casing and bottom pan. Remove the connecting wires behind the sump and check with an ohmmeter whether the thermostat circuit is opened in normal temperature and closed when temperature rises above 67 . If the result is positive, the thermostat is normal. Otherwise, it fails and shall be replaced. Remove the screws and the mounting plate.

Replace a new thermostat and the mounting plate. The mounting plate shall press tight

to prevent water leakage at the thermostat end. Replace the connecting wires, bottom pan and outer casing. The dispenser releases automatically the brightness liquid into the machine at the final rinsing stage. The brightness liquid reduces the surface tension of the water and eliminates dirty spots from the dish surface. The dispenser can hold brightness liquid for one month use. At the final rinsing stage, the electrical controller activates the electromagnetic valve of the dispenser and pulls the rubber gasket of the valve core to release a suitable amount of brightness liquid, which is carried away in the flowing water.

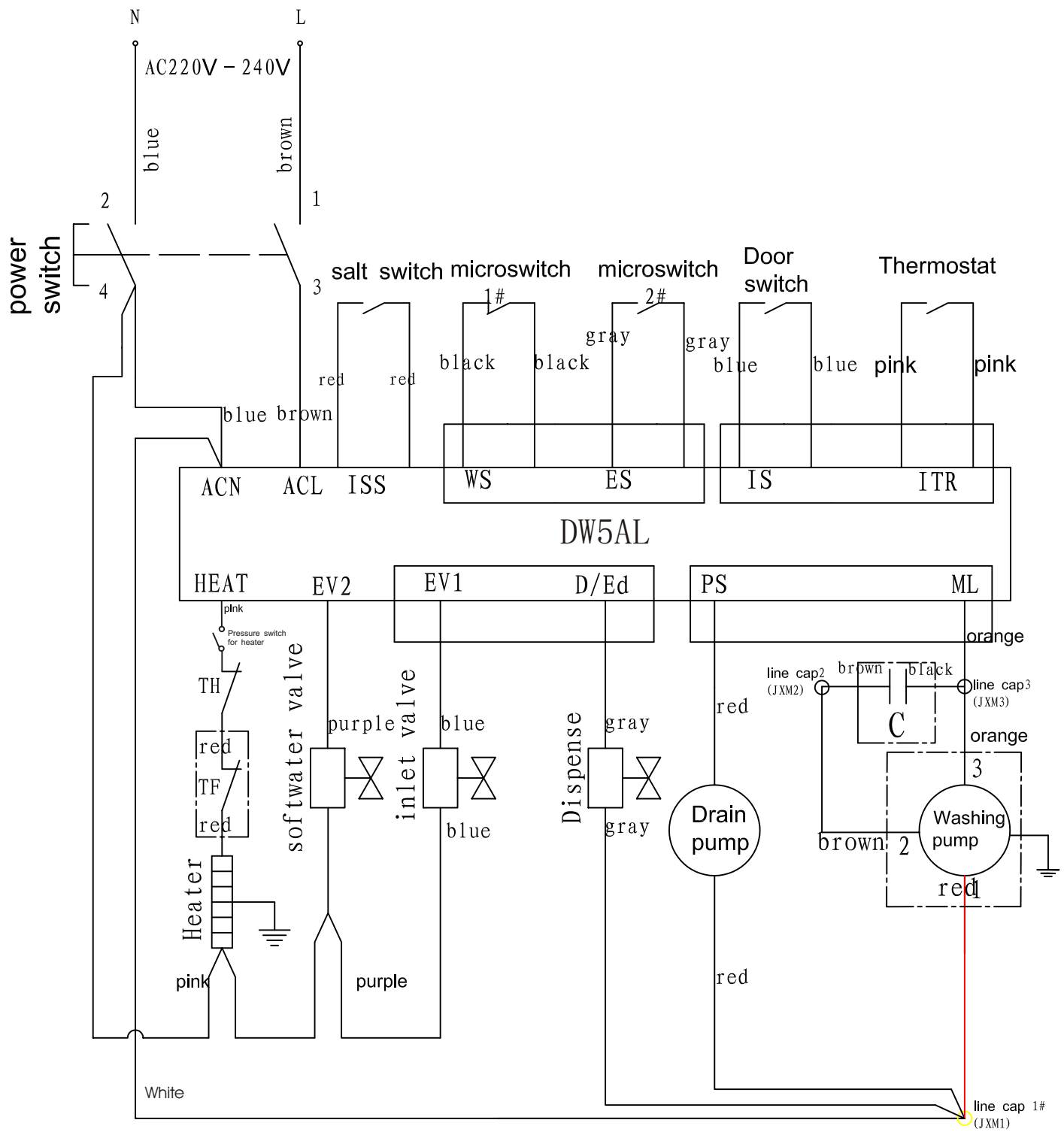
#### Removal and replacement:

Check and replace the dispenser.

- a. Turn the power switch to OFF, and pull out the power cord. Guard against sharp edge from cutting the power cord.
- b. Open the door, remove the four screws in the sides of the inner door, unscrew the knob cap of the dispenser and the two locknuts, and remove the inner door.
- c. Check the dispenser for any leakage or release of brightness liquid. If no brightness liquid is released, check if there is brightness liquid in the dispenser. If there is brightness liquid in the dispenser, check the terminals connected to the dispenser for looseness and fallout.
- d. Pull out the two terminals of the connecting wire connected to the dispenser and remove the dispenser.
- e. Check the electromagnetic valve of the dispenser with an ohmmeter. If the dispenser is broken, replace it.
- f. Connect the terminals of the connecting wire of the dispenser and replace the inner door.
- g. Wrench tight the two locknuts and knob cap of the dispenser and check the dispenser for tightness.

#### **XVI. Spray Arm Assembly**

If the spray arm assembly is blocked, unscrew the nut beneath the spray arm and remove the spray arm to wash out the obstacles. Note: the spray arm nut is turned to the left. When removing the obstacles, do not dig or pry the spray arm and nozzle. Otherwise, the washing effect and the service life of the spray arm may be compromised.



|                                                      |           |                          |                                   |
|------------------------------------------------------|-----------|--------------------------|-----------------------------------|
| Foshan Shunde Midea Washing Appliances Mfg. Co., Ltd |           |                          |                                   |
| Prepared by                                          | francis   | Title                    | Service manual and Wiring diagram |
| Approved by                                          | Peter     | Manufactory Model Number | DW5HL                             |
| Issue date                                           | 2009/3/17 | Kesa model number        | CDW400P                           |
| Company chop                                         |           | Product name             | Dishwasher                        |

